Photoproduction of Quasi-bound ω Mesons in Nuclei $^\diamond$

E. Marco and W. Weise

We propose the (γ, p) reaction as a means of producing possible quasi-bound states of ω mesons in nuclei. We use an effective Lagrangian, based on chiral $SU(3)$ symmetry and vector meson dominance, in order to construct the ω-nuclear potential. The contribution of bound ω states is observable in the missing energy spectra of protons emitted in forward direction for several nuclei.

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Pionic Excitations and Chiral Symmetry in Dense Matter $^\diamond$

W. Weise

This presentation discusses some recent developments in our understanding of the lightest quark-antiquark excitations, both of the condensed QCD vacuum and in a nuclear medium. We focus on two selected topics: the thermodynamics of the chiral condensate and in-medium s-wave interactions of pions with special emphasis on the recently observed deeply bound pionic atom states.

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Proton Spin Structure and the Low-Energy $pp \to pp\eta'$ Reaction $^\diamond$

S.D. Bass

Gluonic degrees of freedom induce a contact term in the effective chiral Lagrangian description of the low-energy $pp \to pp\eta'$ reaction. The strength of this contact term is, in part, related to the amount of spin carried by polarised gluons in a polarised proton.

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QCD Sum Rules and D Mesons in the Nuclear Medium $^\diamond$

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We report on a new QCD sum rule calculation for D mesons in nuclear matter. We find a characteristic shift and a splitting of D^+ and D^- masses in matter.

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